

3.1 Lead by Example

Policy Description and Objective

Summary

State and local governments are implementing a range of programs and policies that advance the use of clean energy within their own facilities, fleets, and operations. These “lead by example” initiatives help state and local governments achieve substantial energy cost savings while promoting the adoption of clean energy technologies by the public and private sectors.

States are leveraging their purchasing power, their control of significant energy-using resources, and the high visibility of their public facilities to demonstrate clean energy technologies and approaches that lower their energy costs and reduce emissions. They also work closely with local governments, schools, colleges and universities, parks and recreation facilities, and other public sector organizations to promote clean energy within their operations. Lead by example programs take many forms, including:

- Incorporating clean energy principles into statewide energy policies.
- Adopting energy efficiency savings goals for existing public buildings.
- Establishing energy efficiency performance standards for new and renovated public buildings.
- Procuring energy-efficient equipment for public facilities, including implementing “green fleets” programs.
- Purchasing and using renewable energy and clean energy generation in public facilities.
- Developing innovative financing mechanisms, including:
 - Establishing energy efficiency loan funds.
 - Creating a master financing program with private sector investors to capture energy savings.
 - Directing public pension fund trustees and managers to establish energy-efficient investment strategies for real estate and securities portfolios

“Lead by example” programs offer states opportunities to achieve substantial energy cost savings within their own operations, demonstrate environmental leadership, and raise public awareness of the benefits of clean energy technologies.

and/or allocate investment funds for energy-efficient and renewable energy technology development.

- Approving legislation enabling state agencies (and other local governments) to enter into energy savings performance contracts that require that the savings cover the cost of financing the improvements out of current and future operating budgets.
- Providing technical assistance and training to state and local facility managers and their staff, including, for example:
 - Developing building design and commissioning guidelines.
 - Assisting with energy audits and implementation of verified savings using Energy Service Companies (ESCOs).

The potential energy and cost savings that can be achieved through energy-efficient improvements in public facilities are substantial. States are responsible for more than 16 billion square feet of building space and spend more than \$11 billion annually on building energy costs, which can account for as much as 10% of a typical government’s annual operating budget (DOE 2005e).

Objective

The objectives of state lead by example programs vary from state to state. They include:

- Serving as a leading component of comprehensive statewide clean energy programs and initiatives and encouraging action by a broad range of public and private sector organizations.

- Accelerating adoption of clean energy in the marketplace by setting an example and demonstrating cost-effectiveness.
- Educating and informing policymakers and stakeholders and raising public awareness about the multiple environmental, economic, and energy benefits that clean energy offers.
- Achieving cost savings through adoption of energy-efficient technologies and clean generation.

Benefits

Lead by example programs provide direct operational benefits to state and local governments, including:

- Reducing facility operation costs and increasing funding available for nonenergy-related expenditures.
- Encouraging clean energy development in the state and region and demonstrating environmental leadership.
- Achieving substantial cost savings through aggregated purchasing of energy-efficient products and green power.
- Supporting the development of in-state markets for clean energy products, manufacturers, and services (e.g., ESCOs, renewable energy equipment installers, and energy-efficient product retailers).

Many state lead by example programs focus on improving the energy efficiency of equipment and building systems. Additional benefits, however, can be achieved by purchasing or generating clean power for public facilities. A number of options are available to state and local governments, including:

- Purchasing green power for public facility consumption.
- Using combined heat and power (CHP) technologies to reduce energy use through higher efficiency.
- Developing onsite clean energy facilities, such as solar photovoltaic (PV), wind, and CHP.
- Using existing government resources for clean power production (e.g., electricity generation from

landfill gas, methane recovery at sewage treatment plants, and biomass resulting from tree and garden trimming).

States with Lead by Example Programs

While the possibilities for state lead by example initiatives are broad, current state lead by example initiatives typically fall into one of the following categories:

- *State Clean Energy Plans.* Several states are incorporating specific clean energy goals and objectives for state facilities in their state energy plans. States that show leadership in this area include Iowa, Connecticut, and California. (See the *State and Local Examples* section on page 3-13.)
- *Energy Savings Targets.* States also set energy savings goals for existing facilities, typically expressed as percentage targets with calendar milestones (e.g., reducing energy use per square foot by 20% by 2010). Several states have enacted legislation to set these targets. For example, in 2003, the Arizona legislature passed HB 2324 that requires state agencies and universities to achieve a 10% reduction in energy use per unit of floor area by 2008 and a 15% reduction by 2011. California,

New York's "Green and Clean" State Buildings and Vehicles

New York's Executive Order 111, adopted in 2001, establishes a comprehensive energy efficiency and renewable energy program through government procurement standards and building design practices. Applicable to all state agencies and departments, the order:

- Sets targets for reducing energy consumption in state buildings.
- Sets goals and targets for purchasing renewable energy sources and clean fuel vehicles.
- Establishes energy performance criteria and guidelines for new and existing buildings.
- Requires purchase of ENERGY STAR products when purchasing new or replacement equipment (New York 2004).

New Hampshire, and New York have also adopted energy savings targets.

- *Energy Efficiency Performance Standards.* Some states establish sustainable design principles that incorporate energy efficiency criteria in performance standards for new and renovated buildings and facilities. States that have established energy efficiency performance standards include Oregon and Massachusetts.
- *Energy-Efficient Purchasing.* States are specifying minimum energy efficiency specifications for a range of products (e.g., appliances, equipment, green fleets of vehicles that use alternative fuels). In some cases, states establish procurement policies that reference the ENERGY STAR label. Where mandatory low-bid requirements are in place, legislative authority might be required to modify procurement regulations. States that have issued executive orders and/or legislation to require procuring energy-efficient products include Arizona, New Hampshire, New York, and California.
- *Clean Energy Generation.* Purchasing and using renewable energy and clean energy generation for state and local facilities is another way states are leading by example. State and local agencies have established clean energy supply targets that are met through onsite generation or by purchasing green power electricity or renewable energy certificates. An increasing number of state and local governments, including New Jersey, New York, and Iowa, are aggregating electricity demand to purchase green power. States are also identifying

Iowa's Executive Order 41

Iowa's Executive Order 41, adopted April 22, 2005, directs state agencies to obtain at least 10% of their electricity from renewable energy sources by 2010. To satisfy this requirement, agencies may generate their own renewable energy or participate in their utility's green power programs (Iowa 2005).

opportunities to generate clean onsite power, such as CHP systems, and to use clean DG technologies for backup or emergency power.

- *Innovative Financing.* States are developing a wide range of innovative financing mechanisms, including revolving loan funds, tax-exempt master lease-purchase agreements, lease revenue bonds, pension funds, and performance contracting. These financing mechanisms, used to finance programs to implement energy efficiency improvements in existing buildings, renovation projects, and new state facilities, are usually administered by the state energy office or other lead agency, which coordinates the program across multiple state agencies.

Iowa has been a leader in state financing for public facilities. Legislation passed in the 1980s established the Iowa Energy Bank and the State Facilities Program. In Maryland, the State Agency Loan Program (SALP) provides 0% loans to state agencies for cost-effective energy-efficient improvements in state facilities. This self-sustaining fund is capitalized with national oil overcharge funds. Since its

Examples of State and Local Green Power Purchasing Contracting

- In 1999, 178 public agencies in New Jersey aggregated power purchases with the goal of negotiating lower energy costs. A portion of the resulting savings was reinvested in clean energy. Now, 12% of the agencies' energy needs are met with green power.
- Montgomery County, Maryland, led a regional partnership to purchase wind energy. Participating entities include six Montgomery County agencies and 12 other

local government entities. Green power currently supplies about 5% of the aggregate demand in county facilities.

- The Cape Light Compact in Massachusetts is an organization with members from all 21 towns of Cape Cod and Martha's Vineyard, and Barnstable and Dukes counties. The Compact negotiates lower cost electricity and other benefits for all members. Recently the Compact began to offer customers green power products with up to 100% renewable energy (EPA 2004a, Montgomery County 2004, Cape Light Compact 2005, DOE 2005d).

inception in 1991, SALP has funded more than \$9 million to upgrade lighting, controls, boilers, chillers, and other energy equipment. Agencies repay the loan through their fuel and utility budgets, based on the avoided energy costs of the project (MEA 2005).

New Hampshire has a master lease program in place for state facilities that leverages energy savings from current and future operating budgets to cover the financing cost of new equipment. California offers a revenue bond program to provide low-cost financing of alternative energy equipment and for energy and water conservation measures by state and K-12 facilities. While performance contracts are not financing agreements, per se, they can assist with project funding and implementation. In Louisiana, state agencies will be able to issue Request for Proposals (RFPs) that essentially follow the performance contract model developed by the state Energy Fund. Colorado passed enabling legislation authorizing performance contracting in the early 1990s.

- *Technical Support.* Many states lead by example by providing technical assistance, training, and evaluation support to state and local agencies and facility operators. State examples include California's new building design and commissioning guidelines and Oregon's Building Commissioning Program. California's Energy Partnership Program provides a variety of services including conducting energy audits, preparing feasibility studies, and reviewing existing proposals and designs. In Washington, school districts are advised to seek the assistance of the General Administration's Energy Savings Performance Contracting (ESPC) program for energy performance contracts and for project oversight.

Designing an Effective Lead by Example Program

Although specific program designs vary from state to state, a number of common elements exist that have helped states develop effective lead by example programs. These include: involving multiple agencies and levels of government, identifying funding sources, and leveraging federal and state programs.

Participants

- *Executive Branch.* The executive branch plays a key role in lead by example initiatives. Many state governors have issued executive orders that set energy savings targets for existing buildings, define energy and environmental performance standards for new buildings, set fuel economy targets for state-owned or -leased vehicle fleets, create green power purchasing policies, and create efficiency guidelines for purchasing energy-using equipment. Since most lead by example initiatives involve state-owned or -leased property, the executive branch typically has broad powers to change policies and practices involving state facilities, fleets, purchasing operations, and other aspects of state government. An example of this is New York's Executive Order 111, Green and Clean State Buildings and Vehicles, which sets targets for 100% of all new light-duty vehicles to be alternative-fueled vehicles by 2010 and for energy consumption in all buildings to be reduced by 35% (relative to 1990 levels) by 2010.
- *State Legislature.* In many cases, legislative authority is not needed to launch lead by example initiatives. However, legislative authority may be required when modifying procurement regulations (e.g., to release state agencies from mandatory low-bid requirements when purchasing green power or to enable agencies to enter into long-term energy service agreements for performance contracting). For example, Washington's Engrossed House Bill 2247 requires energy audits in state buildings, and if the audits produce opportunities to save energy, the improvements are to be accomplished by using performance

contracting. Performance contracting has been promoted by North Carolina's state legislature as a means of reaching its energy savings goals and updating facilities without using limited capital budget dollars.

- *State Energy Office.* In many states, the energy office develops and administers a range of clean energy programs and provides technical assistance and training to state and local agency staff and facility managers. State energy offices also work with other state agencies, local governments, school districts, and other public organizations to identify clean energy opportunities statewide.
- *State Department of General Services and Department of the Treasury.* One of these agencies typically serves as the custodian of state facilities. They administer state capital construction programs and establish guidelines for construction, operation, and purchasing practices.
- *State Housing and Economic Development Offices.* These agencies may operate a variety of programs, including low- and moderate-income housing and development programs, state mortgage financing programs, and enterprise zone and brownfield redevelopment initiatives.
- *Local Governments.* In many cases, local governments have initiated and adopted their own lead by example programs. For example, in Maryland, Montgomery County has developed a green power purchasing program to leverage the buying power of multiple local jurisdictions. Some states work with local governments to educate local officials about these opportunities and to coordinate, pool, and set common criteria for such initiatives. States can also provide financial assistance, education, training, and technical assistance to local governments. For example, Arizona's Municipal Energy Management Program (MEMP), administered by the Arizona Commerce Department, provides training, tools, technical assistance, and grants to municipal and tribal governments to help implement energy saving projects (Arizona Department of Commerce 2005).
- *School Districts, Colleges, and Universities.* There are many opportunities to improve energy efficiency and purchase or generate clean onsite power at K-12 schools, colleges, and universities. One option is to use efficiency savings in operating budgets to finance new energy projects, thereby freeing up capital budget dollars for other uses. In fact, some colleges and universities have found that investing in energy efficiency projects provides better yields than the market. For example, Duke University has used endowment funds to finance energy efficiency projects.
- *Utility Energy Programs.* Utilities that have energy efficiency and onsite distributed generation programs can support a state's lead by example efforts by providing technical assistance to state facility managers and new facility design teams. In some cases, utilities provide funding and incentives to state agencies for clean energy projects. Utilities that administer PBFs or that have regulated efficiency acquisition mandates are typically best positioned to provide this kind of assistance.
- *ESCOs.* ESCOs can perform energy project assessments and/or conduct full energy efficiency projects on a performance-contracting basis. In such projects, the state does not provide upfront capital; the ESCO develops and finances the project, using efficiency savings to cover the cost of capital.
- *Nonprofit Organizations.* Some states designate and work with third-party nonprofit organizations to develop and administer lead by example programs. For example, Iowa established the State of Iowa Facilities Improvement Corporation (SIFIC), a nonprofit corporation that helps state agencies implement cost-effective energy efficiency improvements. Also of note is Efficiency Vermont, which was established in 1999 by the Vermont legislature and Public Service Board as the nation's first statewide energy efficiency utility. Efficiency Vermont provides technical assistance and financial incentives to help Vermonters identify and pay for cost-effective energy-efficient building design, construction, renovation, equipment, lighting, and appliances.
- *State Treasurers and Public Pension Fund Managers.* The role of pension fund trustees and state treasurers is to provide policy direction for fund managers and are increasingly looking for opportunities to improve the value of their portfolios. Some state

treasurers and public pension fund managers invest in clean energy programs and energy audit investments to identify cost savings. For example, California's state treasurer started the Green Wave program to encourage pension fund investment in energy efficiency and renewable energy retrofits and upgrades on state property. This type of investment not only provides an opportunity for fund managers to "green" their portfolios, but also saves money and increases the value of the assets and overall portfolio.

Funding

States sometimes pay for energy efficiency and renewable energy projects with general funds allocated through the budget and appropriations process. However, because of fiscal constraints, states are developing new funding approaches for their clean energy investments. One popular underlying strategy involves redirecting the operating budget dollars saved from the utility budget when energy conservation improvements are made and using the savings to pay for the financing of the needed equipment. Several states have adopted innovative funding mechanisms to support lead by example programs, including:

- **Revolving Loan Funds.** These entities make loans and re-lend current loan payments to fund new projects. The original capitalization can come from a variety of sources including system benefits charges (SBCs) and oil overcharge refunds. They are typically low interest, long-term loans for energy conservation or renewable energy projects. They may cover all capital expenditures or may be on a cost-shared basis. The Iowa Energy Bank, described in the *State and Local Examples* section, on page 3-13, provides an example of how Iowa has structured its loan program. (For more detailed information on revolving loan funds, see Section 3.4, *Funding and Incentives*. Also see the Texas LoanSTAR program in the *State and Local Examples* section.)
- **ESPC.** The ESPC industry has developed over the past 25 years in response to the need for major new capital investments in energy efficiency, particularly in public and institutional facilities. Energy Performance Contracting is a construction method that allows a facility to complete energy-saving improvements within an existing budget by financing them with money saved through reduced utility expenditures. Facilities make no initial capital investments and instead finance projects through guaranteed annual energy savings. Several states have created enabling legislation and developed model programs, helping to develop an industry capable of bringing significant capital investment to state governments. (See Section 3.4, *Funding and Incentives*.)
- **PBFs.** PBFs are funds typically created by per kWh charges on electricity bills. Many states use PBF resources to help support clean energy programs. PBFs were initially developed during the 1990s to provide resources to help fund public benefits programs that utilities were not expected to pursue in a restructured electricity market. These funds are used to support renewable energy, energy efficiency, and low-income programs. (See Section 4.2, *Public Benefits Funds for Energy Efficiency*, and Section 5.2, *Public Benefits Funds for State Clean Energy Supply Programs*.)
- **Aggregated Purchasing Contracts for Green Power.** An increasing number of organizations, including state and local governments, are aggregating electricity demand to purchase green power. By combining the electrical needs of a number of agencies, state and local governments are often able to negotiate lower prices for green power. It is easier to achieve savings from aggregated green power purchases in restructured markets where there are competing energy suppliers.
- **Pension Funds.** Some states use pension funds to invest in clean energy projects. Pension fund managers seek a mix of investments that ensure stable returns for their contributors when they retire. Energy cost savings are captured over a set time period to pay off the capital investment, and generate a solid return to the pension fund.

For example, Washington Real Estate Holdings, a real estate manager for the Washington State Investment Board, which manages the state's pensions, completed a \$3.5 million SMART ENERGY and energy efficiency upgrade of Union Square that lowered the building energy costs by 40% and created 30 jobs for a year (Feldman 2005).

- *Use of Life Cycle Cost Accounting for Energy Efficiency Projects.* Cost-effective energy efficiency investments more than pay for themselves in the form of reduced energy bills over the life of the investment. However, government procurement and capital budgeting practices frequently do not take life cycle costs into account. Procurement rules (e.g., applicable to small purchases, such as equipment replacement) often require states to accept the lowest bid, on a first-cost-only basis. Similarly, capital budgeting (e.g., applicable for larger investments such as new buildings or major renovations) often accounts only for the debt service obligations to the government and does not recognize operating budget savings that can more than offset the debt service payments. These practices often result in the rejection of cost-effective energy efficiency investments because the accounting rules do not fully recognize the benefits of these investments.

To overcome these problems, states have modified procurement rules by (1) specifying minimum efficiency levels for designated types of purchases (such as requiring certain product types to be ENERGY STAR-certified), or (2) instituting a life cycle-cost bid procedure, where vendors provide both equipment investment costs and estimated lifetime energy costs for designated equipment types. For capital projects, a similar approach can be used: either requiring projects to meet specified energy performance targets or including life cycle costs in the project accounting analysis.

Interaction with Federal Policies

Several federal programs, described as follows, provide resources for states as they develop lead by example programs.

The ENERGY STAR Program

The U.S. Environmental Protection Agency (EPA) offers its ENERGY STAR program to governments, schools, and businesses as a straightforward way to achieve superior energy management and realize the cost savings and environmental benefits that can result. EPA's guidelines for building energy management promote a strategy that starts with the top leadership, engages the appropriate employees throughout the organization, uses standardized measurement tools, and helps an organization prioritize and get the most from its efficiency investments. The following aspects of ENERGY STAR offer resources for states as they lead by example.

- *The ENERGY STAR Challenge.* In March 2005, EPA, in partnership with more than 20 leading associations and states, launched the ENERGY STAR Challenge—Build a Better World 10% at a Time. The ENERGY STAR Challenge calls on governments, schools, and businesses across the country to identify the many buildings where financially attractive improvements can reduce energy use by 10% or more and to make the improvements through proven methods such as low-cost building tune-ups, lighting upgrades, and replacement of old equipment. EPA estimates that if each building owner accepts this challenge, by 2015 Americans would save about \$10 billion and reduce greenhouse gas emissions by more than 20 million metric tons of carbon equivalent (MMTCE)—equivalent to the emissions from 15 million vehicles.

As participants in the ENERGY STAR Challenge, states are encouraging energy-efficient improvements in government buildings and facilities, including school districts and county and city governments, and reaching out to businesses in their communities (ENERGY STAR 2005d).

- *Targeted Assistance to States.* ENERGY STAR provides targeted information resources, technical assistance, tools, and communications and outreach support to help state and local governments improve energy efficiency within their own operations. ENERGY STAR tools include guidelines for energy management that are helpful to states in improving their energy and financial performance,

as well as a portfolio manager that provides tools related to benchmarking, measurement and verification (M&V), and investment priorities (ENERGY STAR 2005b).

- *Purchasing and Procurement.* As part of its targeted assistance to states, ENERGY STAR provides a comprehensive guide to purchasing energy-efficient products. These purchasing and procurement resources include sample procurement language and energy efficiency specifications for many products. For products not covered under ENERGY STAR, EPA provides links to the U.S. Department of Energy's (DOE's) recommended energy-efficient products used by federal government procurement officials (ENERGY STAR 2005c).

EPA Combined Heat and Power Partnership

The CHP Partnership is a voluntary program to reduce the environmental impact of power generation by promoting the use of CHP. The partnership works closely with energy users, the CHP industry, state and local governments, and other stakeholders to support the development of new projects and promote their energy, environmental, and economic benefits.

CHP Partner: Essex County New Jersey Correctional Facility

The CHP Partnership recently helped develop a project for the Essex County New Jersey Correctional Facility in Newark, New Jersey. This project will provide 6 MW of electricity, 3,300 tons of chilled water, 80 million Btus (MMBtu) per hour of hot water, and 20,000 pounds per hour of steam for the new facility. The CHP system has been integrated into the design of the facility to maximize energy efficiency results (EPA 2005a).

EPA Green Power Partnership

The Green Power Partnership is a voluntary program developed by EPA to boost the market for clean power sources that do not result in the environmental and health risks associated with conventional

electricity generation. State and local governments participating in the partnership receive EPA technical assistance and public recognition (EPA 2005b).

Green Power Partner: California State University (CSU) at Hayward

CSU at Hayward received the 2004 Green Power Leadership Award for installing the largest solar electric system at any university in the world. The 1 megawatt (MW) system, which will deliver approximately 30% of the campus' peak energy demand during the summer months, is installed on four of the university's largest buildings and covers more than 110,000 square feet. The solar electric installation is expected to reduce electricity bills by \$200,000 annually. CSU at Hayward received a rebate from the electric utility and from the California Public Utilities Commission (CPUC) for half the project cost. The remainder of the project is financed with a 15-year loan, and loan payments will be made out of the energy savings from the solar electric system production (EPA 2005b).

DOE State Energy Program

The State Energy Program is a federally funded program administered by DOE that provides funding and technical assistance resources to state energy offices. Many states have used State Energy Program resources to support their lead by example programs and activities (DOE 2005e).

DOE Federal Energy Management Program (FEMP)

FEMP works to reduce the operating costs and environmental impacts associated with federal facilities by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at federal facilities. Although the program focuses mainly on federal facilities, FEMP offers online information resources, an annual training conference, and workshops that are available to state and local government energy managers (DOE 2005b). The FEMP Web site also provides a

compendium of energy efficiency purchasing recommendations, interactive energy cost calculators, and other resources to help purchase energy-efficient products (DOE 2005c, DOE 2003).

DOE Building Technologies Program

The Building Technologies Program works in partnership with private and public sector organizations to improve building efficiency. This program supports research and development and provides assistance to those interested in building efficiencies through its Web site, which contains a host of tools, including guidelines, training information, and information about how to access financial resources (DOE 2005a).

The Energy Policy Act of 2005 (EPAc 2005)

EPAc 2005 (Section 125) authorizes grants of \$30 million annually for each of fiscal years 2006 through 2010 to fund energy-efficient public buildings (30% above the International Energy Conservation Code [IECC]) and requires that public housing authorities purchase energy-efficient products. In addition, EPAc 2005 (Section 126) contains the Low-Income Community Energy Efficiency Pilot Program for local governments, which authorizes \$20 million for each of fiscal years 2006 through 2008.

Interaction with State Policies

A variety of state programs and policies can be further leveraged by lead by example programs. Key opportunities include:

- *Procurement Policies and Accounting Methods.* Over the last 30 years, some states have modified their public procurement and accounting methods to encourage energy efficiency investments and renewable energy procurements. These innovations include:
 - Permitting long-term contracts, which are often needed for performance contracting agreements.
 - Modifying low-bid requirements, since performance contracts and other energy-saving investments might increase up-front capital costs, but produce lower overall life cycle costs.
 - Revising leasing regulations, so that private entities can be owners of equipment for tax purposes. This can be key to attracting private investment in public facilities.
 - Modifying budgeting and accounting practices, so that facilities (e.g., schools) are allowed to keep some portion of energy savings from efficiency projects. Otherwise, energy bill savings could simply result in reduced budget outlays in subsequent years and would not encourage facility managers to develop energy efficiency projects.

Best Practices: Designing Lead by Example Programs

- *Learn from Your Peers.* Consult with other states that have implemented lead by example initiatives.
- *Secure High-Level Support.* The support of top-level leadership can be critical to the successful revision of clean energy practices that affect state-owned facilities and fleets. For example, in some cases it may be appropriate for the governor (and legislature, if enabling laws are needed) to establish overall goals and/or to require specific rule changes.
- *Follow Up with Administrative Support.* While a law or executive order provides the initial structure for lead by example programs, it is also important to design a strong administrative structure. This entails (1) establishing a lead agency with the authority to implement key targets, (2) setting up a coordinating structure among affected agencies to ensure that the agencies remain involved and that targets are met, (3) developing an approach for M&V of savings, (4) developing an annual reporting system to help ensure accountability for progress and results on stated goals, and (5) ensuring that funds are available for programs that exceed current staff and budget capacities.
- *Leverage Federal Programs.* Review and assess existing federal programs to identify those that provide resources for designing and implementing a lead by example program. For example, the ENERGY STAR program provides energy efficiency specifications for products and building energy performance benchmarking tools.
- *Review and Update the Program.* Periodically (e.g., every five years or less) review and update the state's efforts to bring clean energy investments to its facilities and fleets. Expand efforts that show success and/or potential for success and revise or eliminate unproductive programs.

- Changing state budget “scoring” rules, so that performance contracting, bond issues, or other debt obligations are treated comprehensively rather than simply as costs. Even though these state obligations are often covered by guaranteed-savings agreements, legislative budget procedures often fail to give them a net savings accounting treatment.
- Requiring that state facilities procure a percentage of electricity demand from renewable resources.
- *State Bonding Authority.* States can use public financing mechanisms, such as educational, health, and environmental bond issuance authorities, to help develop clean energy projects or add clean energy features to planned facility bond issues. For example, New Jersey’s Economic Development Authority, in partnership with New Jersey’s Board of Public Utilities, offers a variety of incentives for renewable and energy efficiency measures.
- *Air Quality Planning.* EPA encourages states to use energy efficiency and renewable energy resources in their Clean Air Act compliance plans and related initiatives. Some states have developed specific calculation methods for quantifying the contribution that energy efficiency projects can make to emission reduction targets.

For example, through the Texas Emissions Reduction Plan (also known as “Senate Bill 5”), Texas works with local governments to implement energy efficiency measures that will meet air quality goals through reductions in power plant emissions. (See Section 3.3, *Determining the Air Quality Benefits of Clean Energy.*)

Program Implementation and Evaluation

Because states can choose from a wide range of lead by example programs, specific design and implementation approaches might differ by program. For example, state policymakers may identify one state agency or department to administer and implement their energy efficiency programs and a different agency to lead efforts to encourage distributed generation or

renewable energy. While multiple agencies may be involved in program design and implementation, the more successful state efforts typically include a multi-agency coordination structure.

Successful program implementation flows from a sound design, which in turn flows from a carefully developed overall strategy or plan. For example, some states have developed clean energy plans that set targets for percentage reductions in state facility energy use by certain dates, followed by an implementation plan that includes the specific measures, budgets, timetables, and other details needed to reach those targets.

Evaluation

Evaluation of lead by example programs is important in determining the effectiveness of an initiative. While procedures for evaluating lead by example initiatives will vary according to specific project features, the following general guidelines are applicable to all programs:

- *Develop Baselines.* Baselines will vary depending on the type of initiative. For buildings, current energy use or current building practices define baselines for energy performance. For fleets, estimated current fuel economy averages can serve as baseline data. For procurement procedures, baseline information can be based on current product specifications.
- *Measure and Verify Savings.* Develop reporting and database systems as needed to document the impacts of program initiatives. For simpler efficiency measures whose performance characteristics are well known and consistent, a deemed savings approach, which involves multiplying the number of installed measures by the estimated (or “deemed”) savings per measure, is appropriate. Deemed savings values are derived from extensive field evaluations (CALMAC 2005). For larger and more complex efficiency projects, a project-specific M&V method might be more appropriate (IPMVP 2005). (For more information, see Section 4.1, *Energy Efficiency Portfolio Standards*, and Section 3.4, *Funding and Incentives.*)
- *Communicate Results.* Use monitoring and tracking information to periodically report results.

Best Practices: Implementing Lead by Example Programs

- *Coordinate Across State Agencies.* Involve multiple parties during the design, implementation, and evaluation stages of program development.
- *Assess Energy Use.* Identify opportunities for energy efficiency improvements or more efficient generation and assess the potential energy savings from these options.
- *Select Cost-Effective Measures.* Numerous handbooks and guidelines are available that provide comparative information about clean energy measures. For example, California provides sustainable building design guidelines that present both performance and prescriptive instructions regarding materials use, design principles, and construction techniques (IWMB 2005).
- *Aggregate Purchases.* When implementing an aggregated green power purchases program, the lead agency can establish contracts to procure green power or green tags. In a competitive market, suppliers can be solicited using a competitive bidding process. The selected suppliers can either provide one bill or be asked to split the billing across participants in the aggregated purchase. Purchasing green power for aggregate demand will be more effective and economically feasible in active green power markets.
- *Develop Financing Mechanisms.* A range of financing strategies is available to states for lead by example initiatives. In some cases, states may need to modify their rules to allow agencies to use certain financing mechanisms (e.g., performance contracting) or accounting methods (e.g., extended payback periods). (See Section 3.4, *Funding and Incentives*, for more detailed information on financing options.)

Present impacts in meaningful ways that document the energy, economic, and environmental benefits derived from the program.

- *Review and Reinforce Effectiveness.* Many worthy initiatives fade into inactivity after initial efforts are complete. Use evaluation efforts to ensure that innovations result in lasting changes in institutional behavior and become part of the organizational culture.

State and Local Examples

California

The California Energy Commission (CEC) administers several lead by example programs. In addition, local governments participate in state programs, and have developed their own lead by example programs.

- *California Executive Order S-20-04.* Issued in December 2004, this order requires state agencies

and departments to reduce their energy consumption by 20% from 2003 levels by 2015. The order requires new and renovated state-owned facilities to meet the U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) Silver certification,⁵ requires state agencies to seek office space in buildings with an ENERGY STAR rating for leases of 5,000 square feet or more, and sets procurement policies for ENERGY STAR qualified electrical equipment. The order further instructs the CEC to benchmark all state-owned buildings built by 2007 and requires buildings of 50,000 square feet or more to be retro-commissioned and then re-commissioned every five years.⁶ The executive order also directs the Division of the State Architect to develop new green design guidelines for public schools. Finally, it directs CPUC to ensure that its utility sector efficiency programs encourage owners of privately owned buildings to pursue similar energy efficiency and green-design measures. Both the CEC and CPUC buildings use CHP systems in

⁵ USGBC certifies new buildings based on a cumulative 69-point system at several possible levels: Certified (26-32 points), Silver (33-38 points), Gold (39-51 points), and Platinum (52-69 points). Points are based on a variety of criteria, including energy efficiency, ozone impacts, site development impacts, materials choices, and indoor air quality.

⁶ Retro-commissioning is defined as adjusting energy systems to operate at their intended efficiency levels. Re-commissioning is a periodic check on system performance.

their buildings to help meet these goals. Several state prisons in California also use CHP.

Web sites:

Executive Order S-20-04:

http://www.energy.ca.gov/greenbuilding/documents/executive_order_s-20-04.html

Green Building Action Plan:

http://www.energy.ca.gov/greenbuilding/documents/background/02_GREEN_BUILDING_ACTION_PLAN.PDF

- *Energy Efficiency Financing Program.* Through this program, the CEC provides low-interest loans for public schools, public hospitals, and local governments to fund energy audits and install energy efficiency measures. The interest rate for 2005 is 4.5%, and the maximum loan per application is \$3 million. Recipients who complete their projects within 12 months of the loan and meet all requirements specified in the loan application receive a reduced interest rate of 4.1%. The repayment schedule is negotiable up to 15 years and is based on the annual projected energy cost savings from the aggregated projects.

Web site:

<http://www.energy.ca.gov/efficiency/financing/>

- *Energy Partnership Program.* The CEC offers this program to help cities, counties, hospitals, and other facilities target energy efficiency improvements for existing facilities and energy-efficient options for new construction. The CEC provides a variety of services including conducting energy audits, preparing feasibility studies, reviewing existing proposals and designs, developing equipment performance specifications, reviewing equipment bid specifications, and assisting with contractor selection and commissioning. The CEC also helps identify state loans and other financing sources for project installation.

Web site:

<http://www.energy.ca.gov/efficiency/partnership/index.html>

- *Oakland Energy Partnership.* The city of Oakland established the Oakland Energy Partnership to

reduce energy costs and facilitate improved energy efficiency for Oakland businesses and residents. One component of the program focuses on adjusting large building systems for optimal energy use. This program is expected to reduce electricity demand by 4.6 MW and could reduce operating costs by up to 15% or \$2.4 million per year across the city. Other program components involve installing energy-efficient ballasts in outdoor lighting, providing free design expertise and energy audits, and providing air conditioning tune-ups to small residential and commercial buildings.

Web site:

<http://www.oaklandenergypartnership.com/>

- *Other Local Programs.* Local governments in California are actively involved in developing or purchasing clean energy supplies. For example, in 2001, San Francisco residents passed a \$100 million bond measure to fund the installation of solar power, wind power, and energy-efficient technologies on municipal property. This amount is sufficient to finance about 11 MW of solar power and 30 MW of wind power, which would account for approximately 25% of the city government's power consumption. The bonds will be paid for with energy savings from energy efficiency improvements in city facilities, thereby alleviating the need to cover the bonds with tax increases or other sources. Many other California cities have installed renewable energy systems, primarily solar PV, to power their buildings and facilities. Examples include: PV installations in a wastewater treatment facility in Oroville, a police department in Vallejo, carports in Chico, a municipal service center and bus shelters in Fresno, the Vacaville City Hall, San Diego schools, carports and the jail in Alameda County, and county buildings in Contra Costa County. In addition, San Diego is generating electricity at its wastewater facility using methane co-generation and a low-head hydro-electric generator.

Web site:

<http://www.californiasolarcenter.org/sfbond2001.html>

Colorado

Colorado was one of the first states to pass enabling legislation in the early 1990s that authorized the performance contracting approach and financing mechanisms for local governments. The Colorado Governor's Office of Energy Management and Conservation (OEMC) is the key coordinating agency for performance contracting projects. The OEMC facilitates privately funded performance contracting projects in public facilities; no state funding or financial incentives are involved. Eligible entities include school districts, state agencies, state colleges and universities, public housing authorities, cities, counties, special districts, and some nonprofit organizations (EPA 2004b). As of June 2003, the program had completed or planned \$90 million in energy efficiency upgrades, with annual energy savings of nearly \$9 million (see Table 3.1.1). The performance contracting program is expected to create more than 400 jobs in Colorado.

Web site:

<http://www.state.co.us/oemc/rebuildco/epc.htm>

Iowa

Iowa has several financing-related programs to help public and private entities implement energy-efficient and renewable energy technologies, including a building energy management program for state agencies, a revolving loan fund, and sales tax exemptions for renewable energy equipment.

- *SIFIC*. SIFIC is a nonprofit corporation established to help state agencies make cost-effective energy efficiency improvements in their buildings. The program covers all stages of the project, including feasibility assessments, financing, construction management, and energy savings monitoring. The projects are designed to pay for themselves through reduced energy use.

Web site:

<http://www.state.ia.us/dnr/energy/MAIN/PROGRAMS/BEM/SFP/>

- *The Iowa Energy Bank Program*. This energy management program combines private funds and a small amount of state and federal funding to finance energy efficiency improvements in public and nonprofit facilities, including state facilities. The program uses saved energy costs to pay for the projects. The Energy Bank conducts an energy audit and engineering analysis and negotiates financing terms with private lenders. The program goal is to implement more than \$500 million in energy efficiency improvements.

Web site:

<http://www.state.ia.us/dnr/energy/MAIN/PROGRAMS/BEM/EBANK/>

Table 3.1.1: State of Colorado Performance Contracting Results Through June 2003 (\$ Millions)

Type of Project	Completed Projects		Committed Projects		Total Projects	
	Project Cost	Annual Energy Savings	Project Cost	Annual Energy Savings	Project Cost	Annual Energy Savings
School districts	\$21.28	\$2.32	\$4.95	\$0.56	\$26.23	\$2.88
Colleges and universities	\$4.51	\$0.27	\$20.50	\$2.52	\$25.00	\$2.80
Local and state buildings	\$4.51	\$0.27	\$29.97	\$2.85	\$34.48	\$3.12
Housing authorities	-	-	\$5.00	-	\$5.00	-
Total	\$30.30	\$2.86	\$60.41	\$5.93	\$90.71	\$8.79

Environmental Benefits (Tons/Yr)		Economic Benefits	
• Total SO ₂ savings	197	• Jobs created	408
• Total NO _x savings	226	• Local economic stimulus	\$36.3
• Total CO ₂ savings	158,434		

Source: EPA 2004b.

- *Executive Order 41.* Iowa is joining other states in requiring its state agencies to obtain a percentage of their electricity from renewable energy sources. Executive Order 41, adopted April 22, 2005, requires state agencies to use green power for at least 10% of their electric energy consumption by 2010. Agencies may generate their own renewable energy or participate in utility green power programs, where available. The order also directs state agencies to buy energy-efficient equipment and reduce energy use in buildings by 15% (relative to energy use in 2000) by 2010. With respect to transportation, by 2010, the state's light-duty vehicle fleets (i.e., vehicles other than heavy trucks) must consist of hybrid-electric vehicles and/or vehicles that use alternative fuels, with the exception of law-enforcement vehicles. Furthermore, bulk diesel fuel purchased by the state must contain 5% renewable fuel (such as biodiesel) by 2007, increasing to 20% by 2010 (DSIRE 2005). The state will monitor the program by requiring agencies to submit quarterly progress reports.

Web sites:

http://www.governor.state.ia.us/legal/41_45/EO_41.pdf

http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=IA08R&state=IA&CurrentPageID=1

New Hampshire

The state government is the largest energy user in New Hampshire, with heating, cooling, and electricity costs of more than \$18 million per year. New Hampshire has implemented several projects to measure energy efficiency, track energy savings, and fund related projects for public entities.

- *Executive Order 2005-4.* This order, issued July 14, 2005, requires state agencies to reduce energy use by 10%. State staff are required to purchase equipment with an ENERGY STAR rating. All construction and renovations of state facility design criteria must exceed the state energy code by 20%. Every state agency must also implement a Clean Fleets program, requiring that all vehicles achieve at least 27.5 miles per gallon highway fuel

economy to reduce energy waste (NH Press Release 2005).

- *Executive Order 2004-7.* This order requires the New Hampshire Department of Administrative Services to develop an energy information system, which includes an energy efficiency rating system. State staff are required to conduct an inventory of annual energy use by each of the state's 1,200 facilities starting in 2001 and use EPA's Energy Performance Rating System to assess each facility's energy efficiency. Procedures for tracking and reporting energy use information by each state department are currently being developed.

The executive order also authorizes a steering committee to develop an energy reduction goal and plan, a procedure for conducting audits of facilities that score between a 40 and a 60 on the rating system, procurement policies that require ENERGY STAR products, new energy efficiency standards for new construction, and a procedure for commissioning new facilities that ensures adoption of energy-efficient design specifications and equipment operations. The executive order also establishes specific policies for the transportation sector. The order stipulates that all new vehicles purchased by the state must achieve a highway fuel economy of 30 miles per gallon or better and an emissions classification for a Low Emission Vehicle (LEV) or better. Other efficiency measures affecting transportation include the purchase of low-rolling resistance tires, an anti-idling initiative, and the promotion of ride-sharing among agencies.

Web site:

<http://nh.gov/oep/programs/energy/beci.htm>

- *Building Energy Conservation Initiative (BECI).* Established in 1997, New Hampshire's BECI provides an innovative approach for financing and tracking energy efficiency improvements in public facilities. The BECI uses a "paid from savings" procedure (also referred to as "performance contracting") that allows agencies to pay for energy retrofits and building upgrades with the energy savings from the project, rather than depending on funding through capital appropriations. Under the BECI program, a pre-qualified group of ESCOs submits

proposals to conduct the work based on a predetermined list of energy conservation measures established by the BECI. State facility managers work with performance contracting programs to analyze existing state buildings for energy and resource efficiency opportunities, such as lighting upgrades, heating, ventilation, and air conditioning (HVAC) upgrades, domestic hot water systems, energy management controls, water conservation measures, building envelope improvements, and other cost-effective measures. Measurement and verification requirements are included in each performance contracting proposal, using either a "stipulated savings" approach, in which savings are calculated before the work, or a "measured savings" approach, which involves metering and sub-metering to verify actual savings. Under the current arrangement, savings that exceed loan payments will revert to the state's general fund.

Building upgrades performed through the BECI have resulted in significant energy efficiency improvements and cost savings. Ten buildings have been renovated through the BECI program, including, for example, a New Hampshire Department of Justice building in Concord. Avoided energy costs for these facilities now exceed \$200,000 annually (EPA 2005c). When fully implemented, it is anticipated that the BECI will be responsible for upgrades in more than 500 state-owned buildings, with energy savings of up to \$4 million a year (Pew Center for Global Climate Change 2005). These energy efficiency improvements will reduce CO₂ emissions by approximately 35,000 tons per year. To date, the state has arranged two rounds of Master Lease Purchase (MLP) funding for its facilities. The latest round of \$10 million brings the state's funding to approximately \$25 million. Because a master lease is not considered to be additional debt, it has no negative impact on the state's credit rating (Catalyst Financial Group 2005).

Web site:

<http://nh.gov/oep/programs/energy/beci.htm>

New Jersey

New Jersey administers a number of programs that encourage public agencies and organizations to adopt energy efficiency and renewable energy.

- *Green Power Purchasing Program.* This program is helping to reduce the state's energy costs and support the state goal of reducing greenhouse gases to 3.5% below 1990 levels by 2005. Developed by the New Jersey Transit and the New Jersey Department of the Treasury in 1999, the innovative aggregated green power purchasing program is supplying 500 million kWh of green power to 178 state agencies. The program has expanded green energy markets in the state and encouraged increased private sector green power purchases. The reduced CO₂ emissions are equivalent to removing 32,500 cars from the road for one year.

New Jersey formed the New Jersey Consolidated Energy Savings Program (NJCESP) to oversee and coordinate the consolidated power purchases under the Green Power Purchasing Program. This involves (1) aggregating the power purchases, both green and conventional, for the 178 public agencies, and (2) negotiating power contracts through competitive bidding in the deregulated energy market. The power supply contracts were awarded based on a fixed price per kWh. Competitive bidding allowed these agencies to obtain much lower rates than they would have independently, with an estimated \$100,000 savings, and also provided economies of scale in contract administration and management. Currently, the agencies aggregating electricity purchase in New Jersey are meeting 12% of their needs with green power through green power contracts.

Web site:

<http://www.state.nj.us/dep/dsr/bcsit/GreenPower.pdf>

- *Clean Energy Financing for Schools and Local Government.* This program encourages local governments and school districts to take advantage of New Jersey Clean Energy Program (NJCEP) grants and low-interest bond financing arranged by the

New Jersey Economic Development Authority (EDA) for energy efficiency and renewable energy projects. Clean Energy Financing for Schools and Local Governments offers financial incentives and low-interest financing to schools and governments. This program allows local governments and schools to develop comprehensive energy efficiency and renewable energy generation projects and to save money each month through the low-interest financing program. The program combines the traditional rebate program with incentives and financing, giving schools and local governments the flexibility to implement cost-effective projects immediately.

Web site:

http://www.njcleanenergy.com/media/CEF_Schools_and_Local_Govt_.pdf

- *Clean Energy Financing and Assistance Programs.* The New Jersey Board of Public Utilities (NJBP), in partnership with the New Jersey Economic Development Authority, provides funding and technical assistance to New Jersey based organizations. Various programs cover grants, rebates, and project financing. For example, grants of up to \$500,000 are available in the form of seed funding and commercialization assistance to assist renewable energy companies in bringing their products and technologies to market.

Web site:

http://www.njcleanenergy.com/html/Combined/cleanenergy_financing.html

New York

New York administers several lead by example programs, which are described as follows.

- *Executive Order 111, "Green and Clean" State Buildings and Vehicles.* This executive order, adopted in 2001, is an example of a state comprehensive energy efficiency and renewable energy program. It sets aggressive targets for reducing energy use in state buildings and vehicles, green power purchasing, and purchasing energy-efficient products. Executive Order 111 has been cited as the basis for strong state support for CHP, although CHP is not specifically mentioned in the order.

The order requires all agencies and departments (including state and quasi-independent agencies, such as state universities and the Metropolitan Transportation Authority) to:

- Reduce energy consumption by 35% (relative to 1990 levels) in all buildings that they own, lease, or operate, by 2010.
- Strive to meet the ENERGY STAR building criteria for energy performance and indoor environmental quality in their existing buildings. For new construction, the order directs the agencies to follow guidelines for the construction of buildings that meet LEED certification and achieve a 20% improvement in energy efficiency performance relative to the state's building code.
- Purchase ENERGY STAR-qualified products when acquiring new products or replacing existing equipment. In categories lacking ENERGY STAR products, products must meet New York State Energy Research and Development Authority's (NYSERDA's) target efficiency levels.
- Purchase increasing amounts of renewable energy and "clean fuel vehicles" by 2010.
- Purchase at least 10% of their electricity from renewable sources by 2005 and 20% by 2010. State agencies have met their renewable energy obligations through onsite generation, green power purchases from the open market, or a mix of both options.

Web site:

http://www.nyserda.org/programs/State_Government/exorder111guidelines.pdf

- *Energy Smart Loan Program.* The program is administered by NYSERDA and provides reduced interest loans (4% below the lender rate for 10 years) through an extensive network of local and regional lenders. Loan proceeds can be used to finance energy efficiency and renewable energy systems. Essentially, the program pays lenders interest subsidy payments on behalf of borrowers. Anyone can apply, including local and state government facilities. As of April 2005, NYSERDA had made 250 loans and provided interest subsidies of \$5.3 million on total loans valued at \$42 million through

the Energy \$mart Program. The program is funded annually and expires on June 30 of each year.

Web site:

http://text.nyserda.org/Energy_Information/evaluation.asp

- *New York City Local Law 30.* On April 11, 2003, New York City enacted legislation that codifies its practice of energy-efficient purchasing, a practice dating from 1994. Local Law 30 requires that energy-using products procured by the city of New York be ENERGY STAR-labeled, provided that there are at least six manufacturers of the ENERGY STAR product. During fiscal year 2002, New York City spent \$90.8 million for ENERGY STAR-labeled products, consisting mainly of computers, monitors, printers, photocopiers, fax machines, televisions, VCRs, air conditioners, and lamps.

Web site:

http://www.eere.energy.gov/femp/newsevents/fempfocus_article.cfm/news_id=7214

Oregon

Oregon promotes energy efficiency and renewable energy in state and local government facilities through a variety of mandated and voluntary programs.

- *State Energy Efficiency Design Program (SEED).* The mandated SEED requires all renovation and construction projects for state facilities to exceed Oregon's energy conservation building codes by at least 20%. The state's DOE administers the program and provides technical expertise on each project, helping agencies identify and design the most cost-effective energy conservation measures.

Web site:

<http://egov.oregon.gov/ENERGY/CONS/SEED/SEEDhome.shtml>

- *State Energy Loan Program (SELP).* Oregon also administers SELP, a voluntary program that provides low-interest loans for public, commercial, and residential energy efficiency projects. Eligible projects include energy production from renewable

resources, using recycled materials to create products, using alternative fuels, and installing energy saving technologies such as efficiency lighting and weatherization. As of December 2004, 643 loans totaling \$363 million had been made through SELP. Of these, 215 loans were for renewable energy and 428 were for energy efficiency. Program loans have varied from \$20,000 to \$20 million and there is no legal maximum loan. Loan terms vary from five to 15 years. The program is self-supported, using no tax dollars, and most loans are designed so the energy savings from the project equal the loan payment.

Web site:

<http://egov.oregon.gov/ENERGY/LOANS/selphm.shtml>

- *Commissioning SB 1149 Energy-Related Capital Projects.* Under its Building Commissioning program, the Oregon DOE provides technical assistance to managers of both public and private facilities. The commissioning process helps save energy by ensuring that the lighting, heating, cooling, ventilation, and other equipment in buildings work together effectively and efficiently. The state requires commissioning or retro-commissioning for specified energy-related capital projects that are funded through the state's Public Purpose Fund (established by SB 1149). This includes HVAC and/or direct digital control (DDC) capital projects exceeding \$50,000, boiler and chiller capital projects exceeding \$100,000, and other energy-related capital projects (e.g., lighting and lighting controls, building envelope) exceeding \$150,000.

Web site:

<http://egov.oregon.gov/ENERGY/CONS/BUS/COMM/bldgcx.shtml>

- *State Business Tax Credit for Efficiency and Renewables.* Oregon's Business Energy Tax Credit (BETC) has stimulated significant business investment in energy conservation, recycling, renewable energy resources, and less-polluting transportation fuels since 1980. Any Oregon business may qualify for the tax credit, and a wide variety of businesses have benefited from the credit, including projects

in manufacturing plants, stores, offices, apartment buildings, farms, and transportation.

The tax credit is 35% of the eligible project costs (i.e., the incremental cost of the system or equipment that is beyond standard practice). The credit is taken over five years: 10% in the first and second years and 5% each year thereafter. The unused credit can be carried forward up to eight years. Recipients with eligible project costs of \$20,000 or less may take the tax credit in one year. Through 2003, more than 7,400 Oregon energy tax credits have been awarded. Altogether, these investments saved or generated energy worth about \$215 million a year.

A key feature of the program is its innovative "pass-through option," in which a project owner can transfer a tax credit to a pass-through partner in return for a lump-sum cash payment (the net present value of the tax credit) upon project completion. The pass-through option allows nonprofit organizations, schools, governmental agencies, tribes, and other public entities and businesses with and without tax liability to use the BETC by transferring their tax credit for an eligible project to a partner with a tax liability. Projects that use solar, wind, hydro, geothermal, biomass, or fuel cells (renewable fuels only) to produce energy, displace energy, or reclaim energy from waste may qualify for a tax credit. Renewable resource projects must replace at least 10% of the electricity, gas, or oil used.

Projects that qualify for the BETC include retrofit (including lighting and weatherization for rental properties), new construction (including energy efficiency and lighting), co-generation, renewable resource, recycled materials, and transportation projects. Retrofit projects must be 10% more energy-efficient than existing installation, and lighting retrofit must be 25% more efficient than existing lighting. For new buildings, all measures must reduce energy use by at least 10% compared to a similar building that meets the minimum requirements of the state energy code.

In 2001, the Oregon legislature added sustainable buildings to the list of measures and systems eligible

for the tax credit. This addition became effective October 8, 2001 and is retroactive to January 1, 2001. In addition to several requirements set forth by the Oregon DOE, the building must meet established LEED Silver certification standards. (See Section 3.4, *Funding and Incentives*.)

Web sites:

<http://egov.oregon.gov/ENERGY/CONS/BUS/BETC.shtml>

http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=OR03F&state=OR&CurrentPageID=1

<http://egov.oregon.gov/ENERGY/CONS/BUS/comm/commissioning.shtml>

- *Local Programs.* The city of Portland, through its Office of Sustainable Development (OSD), has also been a pioneer in promoting business, residential, and government energy conservation through its City Energy Policy. Accomplishments attributable to this citywide policy include 22,000 weatherized apartment units, a 9% reduction in per capita energy use, and energy efficiency improvements installed in 40 million square feet of commercial and institutional space.

Portland initiated the City Energy Challenge as one of its first programs to achieve the goals of its Energy Policy, to reduce energy use in city operations, and to set a good example for residents and businesses. Through projects such as innovative green power contracts, traffic signal retrofitting, and methane-powered fuel cells and microturbines, Portland has saved approximately \$2 million annually, or 15% of its overall energy costs.

Web site:

<http://www.sustainableportland.org>

Texas

Texas' State Energy Conservation Office (SECO) administers and delivers a variety of energy efficiency and renewable programs in all market sectors, including state and local facilities. The Energy Systems Laboratory (ESL) at Texas A&M University provides technical assistance to SECO, local governments, and

facility managers for improving energy efficiency in buildings and calculating and quantifying the energy savings and air emission reductions from energy efficiency programs (ESL 2005). ESL has developed eCalc, a Web-based calculator that helps government and building industry users design, evaluate and track a wide range of energy savings projects that result in emission reductions.

- *Alternative Fuels Program.* The Alternative Fuels Program promotes using alternative transportation fuels in Texas by demonstrating their positive environmental impact, technical feasibility, and energy efficiency.

Web site:

<http://www.seco.cpa.state.tx.us/alt.html>

- *LoanSTAR Revolving Loan Program.* The Texas LoanSTAR (Saving Taxes and Resources) Program is SECO's most visible program. Legislatively mandated to be funded at a minimum of \$95 million at all times, the LoanSTAR Program has saved Texas taxpayers over \$146 million to date through energy efficiency projects, financed for state agencies, institutions of higher education, school districts, and local governments. Interest rates are currently set at 3% annual percentage rate (APR). The program's revolving loan mechanism allows borrowers to repay loans through the stream-of-cost savings generated by the funded projects.

Web site:

<http://www.seco.cpa.state.tx.us/lr.htm>

- *Performance Contracting Guidelines and Reviews.* SECO is charged with assisting state agencies with achieving greater energy efficiency, and specifically with reviewing and approving guaranteed energy savings performance contracting for state agencies.

Web site:

http://www.seco.cpa.state.tx.us/sa_performcontract.htm

- *Energy Efficient Partnership Program.* SECO has helped more than 400 Texas school districts identify \$11 million in potential annual utility savings through participation in the Texas Comptroller of Public Account's Energy Efficient Partnership Program. Annual savings range from \$325,000 for a large west Texas district to \$900 for a small east Texas district with less than 300 students.

Web site:

http://www.seco.cpa.state.tx.us/sch-gov_partner.htm

- *Senate Bill 5, the Texas Emissions Reduction Plan.* The 77th Texas legislature passed S.B.5, known as the Texas Emissions Reduction Plan, which imposes new energy efficiency requirements on political subdivisions (i.e., cities and counties) in 38 urban and surrounding counties. The affected political subdivisions must implement energy efficiency measures designed to decrease electric consumption while improving air quality. SECO provides assistance and information to the political subdivisions to help them meet their goals of reducing energy consumption by 5% each year for five years (beginning in January 2001).

Web site:

<http://www.seco.cpa.state.tx.us/sb5compliance.htm>

- *Texas Public Finance Authority (TPFA) Master Lease Purchase Program (MLPP).* This program is a lease-revenue financing program established in 1992 to finance capital equipment acquisitions or other projects by state agencies. It can be used to finance equipment purchases (including energy equipment) of at least \$10,000 that have a useful life of three years or more. Under this program, the TPFA borrows money to pay for an agency's equipment by issuing tax-exempt revenue commercial paper notes. The TPFA obtains title to the equipment and leases it to the agency, which makes lease payments to TPFA. TPFA uses the lease payments to repay the principal and interest on the commercial paper notes; the agency receives title to the equipment once the lease is fully paid.

Web site:

<http://www.tpfa.state.tx.us/MLPPOverview.asp>

What States Can Do

States have chosen from a wide variety of approaches and goals in developing their lead by example programs. These programs have reduced energy costs for state agencies, increased funding for nonenergy related expenditures, and helped stimulate development of clean energy projects and resources. States have also used lead by example programs to encourage other organizations to take actions that support clean energy.

Action Steps for States

Based on the best practices and examples of effective state programs described above, states can take the following action steps when developing their lead by example programs.

- Look across the entire government to identify opportunities for the state to lead by example on clean energy. Communicate with state agencies, local governments, schools, and other public sector organizations to identify effective ways to incorporate clean energy into their activities. Engage facility managers and agency staff for program planning, implementation, training, tracking, and evaluation.
- Explore requirements that ensure that cost-effective energy efficiency improvements are implemented in both new and existing buildings, since these have provided a major opportunity for energy savings in many states. This includes:
 - *Standards for New Buildings.* Most states require that their new facilities meet the most recent version of the ASHRAE 90.1 standard. However, some states have adopted more advanced standards, such as CEC's Title 24 Building Energy Standards (CEC 2005). Voluntary advanced building energy efficiency guidelines are available from ENERGY STAR and the New Buildings Institute (NBI 2004, ENERGY STAR 2005a). Some states have adopted green building standards (USGBC is leading this effort through its LEED certification program) (USGBC 2005). (For more information on building codes, see Section 4.3, *Building Codes for Energy Efficiency*.)
 - *Performance Targets for Existing Buildings.* Typical targets have been set at 20% reduction in current energy use per square foot of floor area, using a recent base year and setting a compliance date of between five and 15 years from enactment of the target.
- Consider procurement policies for products, equipment, and green power.
- Investigate targets for using renewable energy to power state and local facilities, allowing flexibility for different agencies to either develop onsite generation or purchase green power, depending on local conditions. States can also explore opportunities to use CHP at state facilities.
- Develop and enable financing mechanisms. States have developed a range of financing methods, including adoption of legislation or rules that ensure that state facilities can use financing strategies such as performance contracting and revolving loans. (See also Section 3.4, *Funding and Incentives*.)
- Offer staffing, technical assistance, and training to facility managers and staff on developing energy efficiency programs. Some states have established accountability structures within and between agencies so that procurement, facility management, and accounting departments are all engaged in a common effort to save energy.
- Ensure that agencies are authorized to use and are using ESCOs and performance contracting to implement energy savings projects in their facilities, if internal sources of project financing are lacking. States can adopt legislation authorizing the use of performance contracting in public facilities.

Information Resources

General Information About State and Local Programs

Title/Description	URL Address
California Energy Commission: How to Finance Public Sector Energy Efficiency Projects. Describes strategies and funding sources that public sector agencies can use to finance energy efficiency projects.	http://www.energy.ca.gov/reports/efficiency_handbooks/400-00-001A.PDF
California Energy Commission's Title 24 Building Energy Standards. Describes the energy standards for residential and nonresidential buildings.	http://www.energy.ca.gov/title24
California Energy Partnership Program. Provides technical assistance to cities, counties, special districts, public or nonprofit hospitals, public or nonprofit public care facilities, and public or nonprofit colleges/universities to improve energy efficiency in new and existing facilities, and helps arrange financing to conduct projects.	http://www.energy.ca.gov/efficiency/partnership/
California Executive Order S-20-04. This order established a goal of reducing energy use in state-owned buildings by 20% by 2015 and directs compliance with the Green Building Action Plan, which provides details on how the state can achieve these goals. The commercial sector is also encouraged to comply with these two policies. They require CEC to develop a building efficiency benchmarking system and commissioning and retro-commissioning guidelines for commercial buildings.	Executive Order S-20-04: http://www.energy.ca.gov/greenbuilding/documents/background/02_GREEN_BUILDING_ACTION_PLAN.PDF Green Building Action Plan: http://www.energy.ca.gov/greenbuilding/documents/executive_order_s-20-04.html
California Tier 1 and Tier 2 Energy Efficiency and Sustainable Building Measures Checklists. These checklists ensure energy efficiency and sustainable building measures are included in new building construction and renovations. Tier 1 checklist items have been evaluated as "cost effective" and must be incorporated into projects when part of the project scope. Tier 2 checklist items may or may not be cost-effective, but should be considered for inclusion. While the checklists include some performance standards, they are primarily prescriptive in nature.	http://www.ciwmb.ca.gov/GreenBuilding/Design/Guidelines.htm#Whole
Cape Light Compact. This regional services organization provides energy efficiency programs and aggregated power cost negotiations for its members.	http://www.capelightcompact.org/doc.ccm?24,15,215609,cap215609,,,Doc,page.html
Center for Renewable Energy and Sustainable Technology Renewable Energy Policy Project (REPP). REPP supports the advancement of renewable energy technology through policy research. REPP disseminates information, conducts research, creates policy tools, and hosts online, renewable energy discussion groups. The Web site provides information on individual state initiatives.	http://www.crest.org/
Consortium for Energy Efficiency. State and Local Government Purchasing Model Program Plan: A Guide for Energy Efficiency Program Administrators. Provides a step-by-step guide for developing and adopting a successful state and local government procurement program.	http://www.cee1.org/gov/purch/MPP_Final.pdf
Efficiency Vermont. Vermont's statewide energy efficiency utility provides technical assistance and financial incentives to help residents as well as public and private sector organizations identify and pay for cost-effective approaches to energy-efficient building design, construction, renovation, equipment, lighting, and appliances.	http://www.efficiencyvermont.com/index.cfm
Energy Efficiency's Next Generation: Innovation at the State Level. Provides a guide for model policy measures for energy efficiency. American Council for an Energy-Efficient Economy (ACEEE). November 2003.	http://aceee.org/pubs/e031full.pdf

Title/Description	URL Address
New Jersey Clean Energy Program. The New Jersey Board of Public Utilities administers this program, which provides information and financial incentives to help New Jersey residents, business, and communities to help reduce their energy use, lower costs, and protect the environment.	http://www.njcleanenergy.com/
New Jersey's Green Power Purchasing Program. This program allows the state to aggregate electricity purchases for 200 facilities and negotiate lower costs.	http://www.state.nj.us/dep/dsr/bscit/GreenPower.pdf
New York Executive Order 111, Annual Energy Report. This report summarizes projects implemented under Executive Order 111, estimated energy savings, and energy savings and project goals for subsequent years.	http://www.nyserda.org/programs/pdfs/execorder111finalreport7-03.pdf
New York Guidelines: Executive Order No. 111 "Green and Clean" State Buildings and Vehicles: Guidelines, Second Edition. Describes how state agencies can comply with Executive Order 111, including new construction, procuring energy-efficient products, using alternative fuel vehicles, and reporting requirements.	http://www.nyserda.org/programs/State_Government/exorder111guidelines.pdf
North Carolina State Energy Office. The Resources for Government Web page describes North Carolina's Utility Savings Initiative, a comprehensive, multi-programmed approach to reducing utility expenditures and resources in state buildings.	http://www.energync.net/home/efficiency/government.html
Oregon Building Commissioning Program. Provides technical assistance to ensure that building systems are designed, installed, functionally tested, and capable of being operated and maintained according to the owner's operational needs.	http://egov.oregon.gov/ENERGY/CONS/BUS/comm/bldgcx.shtml
Oregon SEED. This program provides energy efficiency assistance for new and renovated public buildings.	http://egov.oregon.gov/ENERGY/CONS/SEED/SEEDhome.shtml
Texas A&M ESL. ESL provides tools, technical assistance, and training to help government and building industry users design and evaluate a wide range of energy savings projects.	http://energysystems.tamu.edu/ http://ecalc.tamu.edu/

Examples of Legislation and Model Language

State	Title/Description	URL Address
California	California Executive Order S-20-04. This executive order establishes energy conservation standards for state-owned buildings and encourages commercial building owners, local governments, and schools to take similar measures.	http://www.governor.ca.gov/state/govsite/gov_htmldisplay.jsp?sCatTitle=Exec+Order&sFilePath=/govsite/executive_orders/20041214_S-2004.html&sTitle=Executive+Order+S-20-04
	California State Administrative Manual-Energy and Water Conservation Revenue Bond Projects. This Web site describes the state Public Works Board (PWB) Lease-Revenue Bond Programs.	http://sam.dgs.ca.gov/TOC/6000/6873.htm
	California State Senate Bill ABX1 29. This bill establishes the California energy efficiency financing program.	http://info.sen.ca.gov/pub/01-02/bill/asm/ab_0001-0050/abx1_29_bill_20010412_chaptered.html
	California State Senate Bill 880 (1986). This bill helped establish the California Energy Partnership Program, which began in 1989.	http://solstice.crest.org/efficiency/irt/64.htm

State	Title/Description	URL Address
Colorado	Colorado Energy Performance Contracting. This Web site provides sample guidance and documents to assist with energy performance contracting.	http://www.state.co.us/oemc/rebuildco/resources/samples/default.htm
	Enabling Legislation for Performance Contracting. (See Title 29 Local Government 29-12.5-101, 29-12.5-102, 29-12.5-103, 29-12.5-104, and Title 24 State Government 24-30-2001, 24-30-2002, 24-30-2003.)	http://198.187.128.12/colorado/lpext.dll?f=templates&fn=fs-main.htm&2.0
Iowa	Alternate Energy Revolving Loan Program: 2005 Iowa Code/Statutes. This legislation describes program administration, eligible entities and projects, and terms of any loans made under this program.	http://nxtsearch.legis.state.ia.us/NXT/gateway.dll/moved%20code/2005%20Iowa%20Code/1?f=templates&fn=default.htm Click "Search Form" tab and enter "476.46."
	Executive Order 41. This order directs state agencies to implement cost-effective energy efficiency measures, purchase at least 10% of building energy requirements from alternative energy facilities, and use alternative fuel vehicles.	http://www.governor.state.ia.us/legal/41_45/EO_41.pdf
	Iowa Energy Bank Enabling Legislation. This bill authorizes state agencies to use lease-purchase financing for energy management improvements and authorizes loans for cost-effective energy management improvements.	http://www.state.ia.us/dnr/energy/MAIN/PROGRAMS/BEM/EBANK/LEG.PDF
	State of Iowa Facilities Investment Corporation Enabling Legislation. This legislation describes the types of energy management improvement loans SIFIC can make.	http://www.state.ia.us/dnr/energy/MAIN/PROGRAMS/BEM/SFP/files/leg.pdf
New Hampshire	Executive Order 2004-7. Signed in October 2004, the order requires 10% efficiency improvement in 1,200 state buildings.	http://nh.gov/oep/programs/energy/beci.htm
New York	New York State Executive Order 111. This order initiates a comprehensive renewable energy and energy efficiency program for New York.	http://www.gorr.state.ny.us/gorr/EO111_fulltext.htm http://www.nyserda.org/programs/exorder111orig.asp
Oregon	Oregon State Law, ORS 276.900-915, State Agency Facility Energy Design. This law established the Oregon SEED program in 1991. SEED helps ensure that state facilities are designed, constructed, renovated, and operated to "minimize the use of nonrenewable energy resources and to serve as models of energy efficiency."	http://www.leg.state.or.us/ors/276.html
	Senate Bill 1149. Adopted in 1999, this bill restructured the electric power industry and created a Public Purpose Fund to finance specified energy-related capital projects, including building commissioning.	http://www.leg.state.or.us/99reg/measures/sb1100.dir/sb1149.en.html
All States	Consortium for Energy Efficiency: Model Energy Efficiency Purchasing Policy. This document includes model language to be used by state and local governments interested in directing agencies to purchase energy-efficient products.	http://www.cee1.org/gov/purch/Purch_policy.pdf

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